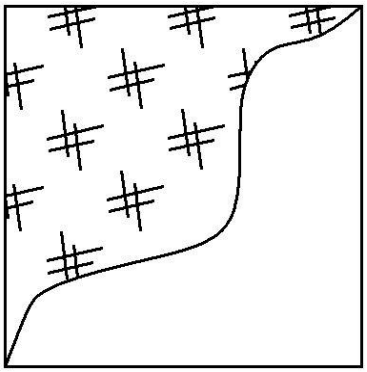
EC-6 HYDRAULICALLY APPLIED EROSION CONTROL PRODUCTS

Refer to: ITD Standards and Specifications for Highway Construction, Sections 212, 621 and 711.
QPL Category: 621 Erosion Blanket – Liquid Mixture (HECPs)



Standard Symbol

Definition and Purpose

Hydraulically applied erosion control products consists of applying a mixture of cut or shaved wood fiber or a bonded fiber matrix and a stabilizing emulsion or tackifier with hydro-mulching equipment, which temporarily protects exposed soil from erosion by raindrop impact or wind.

BMP Objectives

- ☐ **Perimeter Control**
- ☒ **Slope Protection**
- ☒ **Borrow and Stockpiles**
- ☒ **Drainage Areas**
- ☐ **Sediment Trapping**
- ☐ **Stream Protection**
- ☒ **Temporary Stabilizing**
- ☒ **Permanent Stabilizing**

Appropriate Applications

Hydraulically applied erosion control products are applied to disturbed areas requiring temporary protection until permanent vegetation is established or disturbed areas that must be disturbed again following an extended period of inactivity.

Limitations

- Wood fiber hydraulic mulches are generally short-lived (only last part of a growing season) and need 24 hours to dry before rainfall occurs to be effective.
- Use should be avoided in areas where the mulch would be incompatible with future earthwork activities and would have to be removed.

Design Parameters

- Prior to application, embankment and fill areas should be rolled with a crimping or punching type roller or track walked. Track walking shall only be used where other methods are impractical.

- Hydraulically applied erosion control product over-spray onto the traveled way, sidewalks, lined drainage channels, and existing vegetation shall be avoided.
- Hydraulically applied erosion control products shall be applied per the manufacturer's recommendations.
- **Hydraulic Mulch** is a hydraulically-applied material containing defibrated paper, wood and/or natural fibers that may or may not contain tackifiers used to provide erosion control and facilitate vegetation establishment on MILD SLOPES (3H:1V max.) and designed to be functional for up to 3 months. Wood mulch is typically applied at the rate of 2,000 to 4,000 pounds/acre. Wood mulch is manufactured from wood or wood waste from lumber mills or from urban sources.
- **Stabilized Mulch Matrices (SMM)** are a hydraulically-applied matrix containing defibrated organic fibers with, at a minimum, one of the following additives: soil flocculants, crosslinked hydro-colloidal polymers, or crosslinked tackifiers. Utilized to provide erosion control and facilitate vegetation establishment on MODERATE SLOPES (2H:1V max.) and designed to be functional for a minimum of 3 months. SMM are applied as a liquid slurry using a hydraulic application machine (i.e., hydro-seeder) at the following typical minimum rates, or as specified by the special provisions, to achieve complete coverage of the target area: 750 pounds/acre wood fiber mulch and 55 gallons/acre of acrylic copolymer.
- **Bonded Fiber Matrices (BFM)** are a hydraulically-applied matrix of organic defibrated fibers and cross-linked insoluble hydro-colloidal tackifiers to provide erosion control and facilitate vegetation establishment on STEEP SLOPES (1H:1V max.) and designed to be functional for a minimum of 6 months. BFMs form an erosion-resistant blanket that promotes vegetation and prevents soil erosion. BFMs are typically applied at rates from 3,000 to 4,000 pounds/acre based on manufacturer's recommendation (the biodegradable BFM is composed of materials that are 100 percent biodegradable). The binder in the BFM should also be biodegradable and should not dissolve or disperse upon re-wetting. Typically, biodegradable BFMs should not be applied immediately before, during, or immediately after rainfall if the soil is saturated.
- **Fiber Reinforced Matrices (FRM)** are a hydraulically-applied matrix containing organic defibrated fibers, cross-linked insoluble hydro-colloidal tackifiers, and reinforcing natural and/or synthetic fibers to provide erosion control and facilitate vegetation establishment on VERY STEEP SLOPES (0.5H:1V max.) and designed to be functional for a minimum of 12 months.

Qualified Products List Criteria

All hydraulically applied erosion control products shall meet the State of Idaho State Department of Agriculture Seed Laboratory or the North American Weed Management Association (NAWMA) noxious weed-free certification requirements prior to approval.

Laboratory and field testing results supporting the manufacturer's data shall be provided from one of the following and meet the criteria in Table 1 below.

- Utah Water Research Laboratory (UWRL)

- San Diego State University/Soil Erosion Control Laboratory (SDSU/SERL)
- Texas Transportation Institute (TTI)

Table 1
Hydraulically Applied Erosion Control Products, Qualified Products List Criteria

	Hydraulic Mulch	Stabilized Mulch Matrix	Bonded Fiber Matrix	Fiber Reinforced Matrix	Fiber Reinforced Matrix Extended
ASTM 7322 - Ability to Encourage Seed Germination and Plant Growth	200% min.	400% min.	600% min.	800% min.	500% min.
ASTM 7367 - Water Holding Capacity	900% min.	1300% min.	1400% min.	1500% min.	1500% min.
ASTM D 6818 - Wet Bond Strength	N/A	4.5 lb/ft	4.5 lb/ft	4.5 lb/ft	4.5 lb/ft
ASTM 7101 - EPA 2021.0 (96 hr LC50)	>100%	>100%	>100%	>100%	>100%
ASTM D 5338 - Plastic Aero Biodegradability	100%	100%	100%	100%	100%
ASTM D 2974 - Organic Material	90% min.	90% min.	90% min.	90% min.	90% min.
ASTM D 6566 - Mass per Unit Area	N/A	9.5 oz/yd	11.5 oz/yd	11.5 oz/yd	11.5 oz/yd
ASTM D 6525 - Thickness	N/A	0.10 in	0.12 in	0.17 in	0.21 in
ASTM D 6567 - Ground Cover	N/A	95%	97%	99%	99.9%
ASTM 6459 - C Factor	0.15 max.	0.15 max.	0.15 max.	0.15 max.	0.15 max.
EcoToxicity - EPA - 821 - R - 02-012 measuring acute toxicity of effluents. Test leachate from recommended application rate receiving 2 inches of rain per hour using static test for Non Observed-Adverse-Effect-Concentration (NOEC)	NOEC	NOEC	NOEC	NOEC	NOEC
Longevity	1-3 months	3-6 months	6-12 months	12-18 months	18-24 months

All hydraulically applied erosion control products shall also meet the following criteria:

- Shall be degradable and free of chemical printing ink, germination inhibitors, herbicide residue, chlorine bleach, rock, metal, plastic, and other materials detrimental to plant life.
- May have up to 5 percent by weight photodegradable material.
- Shall be suitable for spreading with a hydroseeder.
- Shall be manufactured in such a manner that when agitated in slurry tanks with water, the fibers will become uniformly suspended, without clumping, to form a homogeneous slurry.
- All dyes shall be non-toxic to plants, animals, and aquatic life and shall not stain concrete or painted surfaces.
- Shall be furnished with a Material Safety Data Sheet (MSDS) that demonstrates that the product is not harmful to plants, animals, and aquatic life.

Maintenance and Inspection

- Conduct inspections as required by the NPDES permit or contract specifications.
- Maintain an unbroken, temporary mulched ground cover throughout the period of construction when the soils are not being reworked. Repair any damaged ground cover and re-mulch exposed areas of bare soil.
- The Contractor is responsible for maintaining all slopes to prevent erosion.